

REMARKS

Claims 1-3, 5, 7-9 and 12-15, which are in the application stand rejected under 35 USC 112 first paragraph and 35 USC 103. Claims 13 and 14 stand rejected under 35 USC 112, first paragraph seemingly on the grounds that they are substantial duplicates of each other. Claims 1-3, 5, 7-9 and 12-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Angerer et al (USPN 5,480,984) in combination with Hilbig et al (USPN 5,708,162), Gill (953944) of record and Janocha et al (DE 1543116) newly cited.

Applicants submit that the claims in the application are patentably distinct and are in a condition for allowance. More specifically, with regard to the 112 rejection, Applicants submit that there is sufficient "claim differentiation" between Claims 13 and 14 to rebut the assumption that one is a duplicate of the other. With regard to the 35 USC 103 rejection, Applicants submit that cited the references lack a basis for the Examiner's proposed combination with a reasonable expectation of success.

Applicants present more fully hereunder the patentable distinction of the claims by presenting a summary of the invention, basis for the rejection and how they have been avoided or overcome.

Summary of the Invention

The claimed invention relates to a process for the production of low-viscosity water-soluble cellulose ethers by oxidative decomposition of higher-viscosity cellulose ethers. The process is carried out by forming a mixture at 65-125°C comprising higher-viscosity cellulose ethers and aqueous hydrogen peroxide with a hydrogen peroxide content of 0.1-10 wt. % relative to dry cellulose ether and a solid content of the mixture being 25 wt. % relative to the total quantity of the mixture. This is followed by agitating the mixture continuously at the said temperature until approximately at least 90% of hydrogen peroxide has been spent; wherein the mixture is agitated continuously at temperatures of 75-100 °C; wherein the pH of the mixture is set at more than 4.5. The water soluble cellulose is selected from carboxymethyl cellulose, hydroxyethyl carboxymethyl cellulose, sulfoethyl cellulose, hydroxyethyl sulfoethyl cellulose, hydroxyethyl cellulose, methyl cellulose, methylhydroxyethyl cellulose,

methylhydroxyethyl sulfoethyl cellulose, methylhydroxypropyl cellulose, hydroxypropyl cellulose, hydrophobically modified forms of these and mixtures thereof; water-wet filter cakes of above mentioned celluloses;

Amounts of 0.2 to 2.5 wt. % of hydrogen peroxide relative to dry cellulose ether is used; a higher-molecular cellulose ether with a solid content of 40 to 55 wt. % in relation to total quantity of cellulose ether and solvent is used; the process where the pH is 6 to 7 and a process wherein the second solution contains alkali salts.

Basis for the 35 USC 103 Rejections and how they have been Overcome or Avoided

The references and arguments supporting the 35 USC 103 rejection are stated and refuted as follows.

In support of the rejection, the Examiner cited Angerer et al for the proposition that it teaches a process for producing low viscosity water-soluble polysaccharide products via the oxidation of cellulose ethers (with percent solids greater than 5%) with aqueous hydrogen peroxide as the oxidizing agent (see entire document). The oxidative decomposition is carried out by heating a mixture of the cellulose ether and hydrogen peroxide in water at 80 °C, with continuous agitation. The oxidative decomposition is also carried out by adding a mixture of peroxide and cellulose ether in stages. The percentage of hydrogen peroxide used is also in the range instantly claimed. Since the reaction is performed in aqueous solution, the pH of the mixture should be close to 7 (see Examples 1-4). The polysaccharide decomposed in the reaction is chosen from a wide variety of cellulose ethers and hydrophobically modified varieties of them (see col. 6, claim 4).

In establishing the difference between Angerer et al and the claims, the Examiner states that Angerer et al do not explicitly say that the starting cellulose ethers of their invention have a high viscosity and also do not teach the oxidative decomposition of water-wet filter cakes of the cellulose ethers.

Given the Examiner's acknowledged difference, the issue is whether there is any basis in Angerer et al which would have led the skilled artisan to modify Angerer et al to the claims. Applicants submit that the record does not point to evidence or practical reason of record, which would have provided a basis for modifying Angerer et al to the claims.

Gill is cited for the proposition that it teaches (see entire document) reduction of viscosity of water-soluble cellulose ethers using aqueous hydrogen peroxide in the temperature range 70-100 °C (see table 1, page 3 and examples) at a pH of between 5 and 9 (see claim 8, page 4).

While the Examiner is correct in citing Gill for the above proposition, Gill nonetheless falls short of teaching the elements of the claim relating to the tiered temperature and pH of the claimed process.

Hilbig et al is cited for the proposition that it teaches the oxidative degradation of high viscosity polysaccharides using perborate as the oxidizing agent, to give low-viscosity polysaccharides (see col.3. lines 36-52; col. 7, lines 40-48 and Examples 2-8). Even though perborate is used as the oxidizing agent in this invention, the same results can be achieved with hydrogen peroxide.

Applicants traverse the rejection based on Hilbig et al on the grounds it is apparently based on unsupported general knowledge. It is well settled in the law that when a rejection is based on facts within the personal knowledge of the Examiner, data should be provided as specifically as possible, and the facts must be supported when called for by Applicant, *In re Lee*, 61 USPQ 1430 (CAFC2000). In this case, Applicants are unaware of using perborate as an oxidizing agent in accordance with the claimed invention to achieve the same results as hydrogen peroxide. Applicants respectfully request the Examiner provide factual support for the above assertion.

Janocha et al is cited for the proposition that it teaches the process for making low-viscosity cellulose ethers using 0.1 to 10% weight percent of hydrogen peroxide
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(see claim 1, page 11). They also teach the adjustment of pH from 9-11 (see claim 6, page 12). Even though the pH range mentioned by Janocha et al is 9-11, one of ordinary skill in the art can adjust it to any desired range for optimizing process. Even though Angerer et al and Gill use higher percentages compared to the instant process, the concentration of the reagents used in the process can also be adjusted for the purpose of optimizing the process and product quality.

Applicants traverse the rejection over Janocha et al because the record does not point evidence or practical reason of record for the proposed modification with a reasonable expectation of success, In re Fine 5 USPQ 1596 (Fed. Cir. 1988). The fact that one of ordinary skill in the art can modify the prior art does not render the prior art obvious, absent some basis in the art for making the modification.

Claim 15 is further rejected on the grounds that it recites alkali salts, which are all well-known components as a buffer in the chemical arts. One of ordinary skill in the art can use those in the process for adjustment of pH even though it is not taught by the prior art of record. Here again, Applicants traverse the rejection because the mere fact that one of ordinary skill in the art can modify the prior art does not render the claim obvious, absent some basis in the art for making the modification.

In view of the foregoing, it is Applicants' submission that neither of the teachings of Angerer et al, Hilbig et al, Gill or Janocha et al separately nor in a combination thereof renders obvious the claimed process of producing low-viscosity cellulose ethers as instantly claimed because the lack the basis for modification to the claims.

Applicants arguments of patentable distinction is supported by the teaching of Hilbig et al that the decomposition of hydrogen peroxide as a disadvantage in the process, In re Gordon 221 USPQ 1125 (Fed Cir. 1984). The Examiner's assertion that one of ordinary skill in the art can adjust the concentration of hydrogen peroxide to compensate for the decomposition by adding some more in the process as is done in the instant process is unsupported. Applicants respectfully request the Examiner to provide factual support for the above assertion, In re Lee, supra.

In view of the foregoing, Applicants submit that the claims are patentably distinct over the prior art, and therefore pray for their allowance. In the alternative, Applicants hereby request an Examiner's interview to discuss how the application can be advanced to a condition for allowance.

Respectfully submitted,

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